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Amendments to Claims

This listing of the claims will replace all prior versions, and listing, of claims in the application:

1.(currently amended) An inverse multiplexer device comprising:

an input port for receiving a stream of data packets;

a plurality of output ports for connection to outgoing physical links;

transmit buffers for preparing outgoing packets for transfer to said output ports;

a first expansion port connectable into a parallel ring and capable of receiving packets from said transmit buffers and transferring them through a corresponding second expansion port on an other like inverse multiplexer device to designated outgoing physical links on said other inverse multiplexer device; and

a controller for transferring the data packets in a round-robin fashion from said transmit buffers through said output ports or said first expansion port to a group of outgoing physical links made up of links associated with both said inverse multiplexer device and said other inverse multiplexer device and forming an inverse multiplex group in accordance with an inverse multiplex protocol; and

wherein said first expansion port further comprises a master ring controller for permitting said inverse multiplexer device to act as a master and control overall operation of said parallel ring;

whereby said inverse multiplexer devices can be cascaded to increase the number of output links that can be accommodated by said inverse multiplex protocol.

2.(previously presented) An inverse multiplexer device as claimed in claim 1, wherein said first expansion port is connected between said transmit buffers and said output ports associated therewith.

3.(previously presented) An inverse multiplexer device as claimed in claim 2, further comprising connections normally connecting said output ports with their respective associated transmit buffers, and switches in said connections to divert packets on command through said first expansion port to output links on said other like inverse multiplexer device.

4.(canceled)

5.(currently amended) An inverse multiplexer device as claimed in claim [[4]] 1, wherein said parallel ring carries control messages between said inverse multiplexer devices.

6.(previously presented) An inverse multiplexer device as claimed in claim [[4]] 1, further comprising address registers for storing an address on said ring of the transmit buffers and output ports connected to said ring.

7.(previously presented) An inverse multiplexer device as claimed in claim 6 wherein said ring has a control port common to transmit and receive directions.

8.(previously presented) An inverse multiplexer device as claimed in claim 1, further comprising a plurality of additional input ports for receiving streams of packets from a plurality of incoming physical links, receive buffers for receiving incoming packets on said incoming physical links, an additional output port for outputting a single stream of packets received on said incoming physical links, and said first expansion port also being connected between said additional input ports and said receive buffers so as to permit packets arriving on a physical link connected to said other inverse multiplexer device to be diverted to one of said receive buffers.

9.(previously presented) An inverse multiplexer device as claimed in claim [[4]] 1, wherein said first expansion port comprises a message assembler for assembling outgoing bytes into messages containing a destination address, and an address comparator for extracting incoming bytes destined for said inverse multiplexer device.

10.(canceled)

11.(currently amended) A method of inverse multiplexing stream of data packets comprising the steps of:

providing at least two like inverse multiplexer devices, each said inverse multiplexer device having an input port for receiving a stream of data packets, a plurality of output ports for connection to outgoing physical links, transmit buffers for preparing outgoing packets for transfer to said output ports, and a first expansion port capable of receiving packets from said transmit buffers and transferring them through a corresponding second expansion port on the other like inverse multiplexer device to designated output links on the other like inverse

multiplexer device;

receiving a stream of data packets on the input port of one of said inverse multiplexer devices forming a master;

forming an inverse multiplex group comprising physical links associated with said inverse multiplexer device and at least one other said inverse multiplexer device; and

transmitting said received packets over said physical links forming the inverse multiplex group in a round-robin fashion in accordance with an inverse multiplexing protocol by passing said packets assigned to links on said other device through said expansion port; and

wherein said packets are passed to the other inverse multiplexer device over a parallel ring controlled from a common expansion port.

12.(canceled)

13.(canceled)

14.(previously presented)A method as claimed in claim [[13]] 11, wherein said parallel ring carries control messages between said like inverse multiplexer devices.

15.(previously presented)A method as claimed in claim 14, wherein said control messages comprise a data byte and a control byte.

16.(previously presented)A method as claimed in claim 15, wherein said control byte includes a destination address for said data byte.

17.(previously presented)A method as claimed in claim 16, wherein said first expansion port strips incoming bytes from said control messages when the destination address matches an address on the inverse multiplexer device and passes the extracted bytes to an appropriate one of said output ports.

18.(previously presented)A method as claimed in claim 17, wherein said first expansion port controls a switch connecting the transmit buffers to associated output ports on the same inverse multiplexer device.